CLAIMS

1. A method for plasma-enhanced chemical vapor deposition in which a discharge electrode and a substrate are disposed opposite to each other in a vacuum film formation chamber into which a gas for forming a film containing a substance has been introduced, and high-frequency electric power generated by a high-frequency electric power feeding circuit is fed to a plurality of feeding points provided to the discharge electrode through a plurality of external cables which are disposed outside the vacuum film formation chamber and then through a plurality of internal cables which are disposed inside the vacuum film formation chamber and which correspond with the external cables, respectively, so as to generate plasma between the discharge electrode and the substrate to vapor deposit the substance on the substrate,

the method for plasma-enhanced chemical vapor deposition comprising adjusting phases of the high-frequency electric power at the feeding points by changing electrical characteristics of the external cables, the high-frequency electric power being fed to the plurality of feeding points.

2. A method for plasma-enhanced chemical vapor deposition according to claim 1, wherein the phases of the high-frequency electric power at the feeding points, the high-frequency electric power being fed to the plurality of feeding points, are adjusted by carrying out vapor deposition with change in

electrical characteristics of the external cables, carrying out observations of the condition of the substance which has been vapor deposited on the substrate, and changing the electrical characteristics of the external cables on the basis of the observations.

3. A method for plasma-enhanced chemical vapor deposition according to claim 1 or 2, wherein said electrical characteristics are changed by changing lengths of the external cables.

4. A method for plasma-enhanced chemical vapor deposition according to claim 3, wherein the lengths of the external cables are changed by attaching or detaching at least one connector.

5. A method for plasma-enhanced chemical vapor deposition according to claim 1 or 2, wherein the external cable is in a structure such that a conductor is surrounded by an insulating material, and said electrical characteristics are changed by changing a relative dielectric constant of the insulating material.

6. A method for plasma-enhanced chemical vapor deposition according to any one of claims 1 to 5, wherein the insulating material of the external cable is polytetrafluoroethylene.

7. An apparatus for plasma-enhanced chemical vapor deposition in which a discharge electrode and a substrate are disposed opposite to each other in a vacuum film formation chamber into which a gas for forming a film containing a substance is to be introduced, and high-frequency electric power generated by a high-frequency electric power feeding circuit is to be fed to a plurality of feeding points provided to the discharge electrode through a plurality of external cables which are disposed outside the vacuum film formation chamber and then through a plurality of internal cables which are disposed inside the vacuum film formation chamber and which correspond with the external cables, respectively, so as to generate plasma between the discharge electrode and the substrate to vapor deposit the substance on the substrate,

wherein length of each of the external cables has been changed to adjust phases of the high-frequency electric power at the plurality of feeding points.

8. An apparatus for plasma-enhanced chemical vapor deposition in which a discharge electrode and a substrate are disposed opposite to each other in a vacuum film formation chamber into which a gas for forming a film containing a substance is to be introduced, and high-frequency electric power generated by a high-frequency electric power feeding circuit is to be fed to a plurality of feeding points provided to the discharge electrode through a plurality of external cables which are disposed outside the vacuum film formation

chamber and then through a plurality of internal cables which are disposed inside the vacuum film formation chamber and which correspond with the external cables, respectively, so as to generate plasma between the discharge electrode and the substrate to vapor deposit the substance on the substrate,

wherein the relative dielectric constant of each of the external cables has been changed to adjust phases of the high-frequency electric power at the plurality of feeding points.